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BOYS MEET EAGLE

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July Announcement

The regular July meeting of the California Academy of Sciences will be held in Room 214, Simson African Hall on Wednesday afternoon, July 5, 1944, at 3:00 o'clock. The speaker will be Dr. George J. Pierce, Professor of Plant Physiology, Emeritus, in Stanford University, who will take as his subject:

Water and Plant Anatomy

The body of the higher land plants consists of tissues among which the various functions are divided and by which the various needs are met. In order to provide a path of water movement from soil to air through the body of the plant there must be a vascular system sufficiently flexible that it will meet the need of the plant in all of its circumstances, ranging from saturated soil and air to soil and air almost dry. Combining mechanical support and water lift, one finds the vascular tissues variously strengthened and the vascular tissues themselves variously composed of elements as different as the small one-celled tracheids of the wood of the conifers and the large many-celled vessels of the annual herbaceous plants of the rainy season. Furthermore, the same individual plant may produce different conducting tissue in the same year according to the external environment.

The common garden sweet pea, under various conditions of soil and air temperature, moisture, etc., produces slender stems of very different length from seeds of the same variety. Where air dryness makes transpiration from the leaves too rapid for the vascular bundles of the stems to offset, no matter how scrupulously the bed may be ground watered, the stems promptly cease to elongate. The water-carrying capacity of the stems seems to determine the height of the plants.

The amount of precipitation and the anatomy of the plants living in a given area are two of the factors which determine the character of the vegetation, limiting a natural area to grassland, chaparral, or forest, and correspondingly limiting what man can do in the area. Attempts to establish forest, without irrigation and other care, in regions of limited rainfall and naturally supporting only grass or even chapparal, seem unlikely to succeed because the water-carrying capacity of the wood is unequal to the task of moving water fast enough from the roots in dry soil to leaves in dry air at any but limited heights above the ground. The height to which a plant can grow is the height to which its vascular system can carry water.

Professor Pierce, who has made a long-time study of these problems, has the enviable reputation of being able to present a technical subject in such a manner as to make it seem simple, easy and, above all, interesting. The above account is, in fact, quoted almost verbatim from one of his recent scientific papers, which was published by the Academy.

The public is cordially invited to hear Professor Pierce.

Applications for Membership

Notice is hereby given to all Corporate Members that the Council at its meeting of June 15, 1944, approved the applications of Miss Margaret E. Hewitt, Mrs. Hazel E. La Husen, Mr. J. Lewis Renton, and Mr. Alfred Schmitz for Membership, and of Mr. Ralph Dunn and Mr. Richard Svihus for Student Membership in the California Academy of Sciences. If no objection to the election of these applicants be received at the office of the Academy within two weeks after June 30 they will be considered elected.

Some Poisonous Fishes Found in the South Pacific

So many inquiries have been received regarding poisonous fishes in the South Pacific and so much interest has been manifested by service men expecting to go overseas that it has seemed desirable to include in the News Letter some general information on this topic. The following account, most of which is drawn from "A Guide to the Study of Fishes" by David Starr Jordan and "Poisonous Fishes of the Philippine Islands" by Alvin Seale, has been compiled by Dr. J. L. Kask, the Academy's Associate Curator of Fishes. The illustrations on pages 4 and 5 were made by Mrs. Kask.

FISHES THAT ARE POISONOUS UNDER CERTAIN CONDITIONS

Of the two thousand or more fish found around the islands of Oceania almost all are good to eat in the fresh condition. There are a few exceptions.

POISONOUS FISHES

DO NOT EAT ANY FISH RESEMBLING THESE IN SHAPE

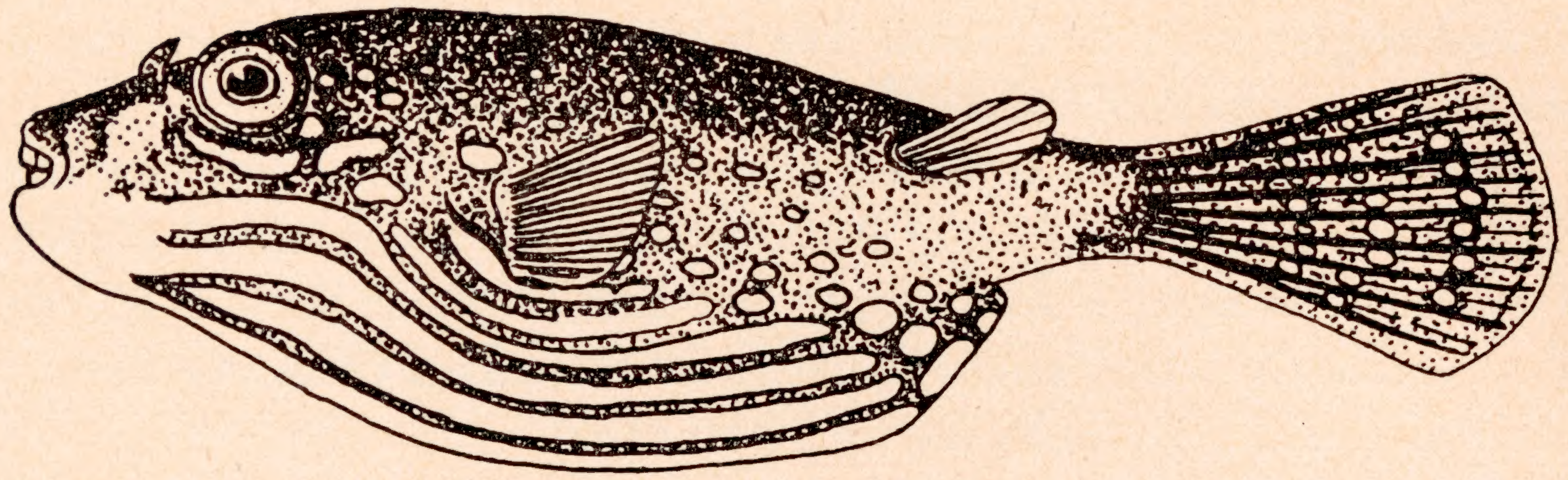

FIG. I

PUFFER OR GLOBEFISH

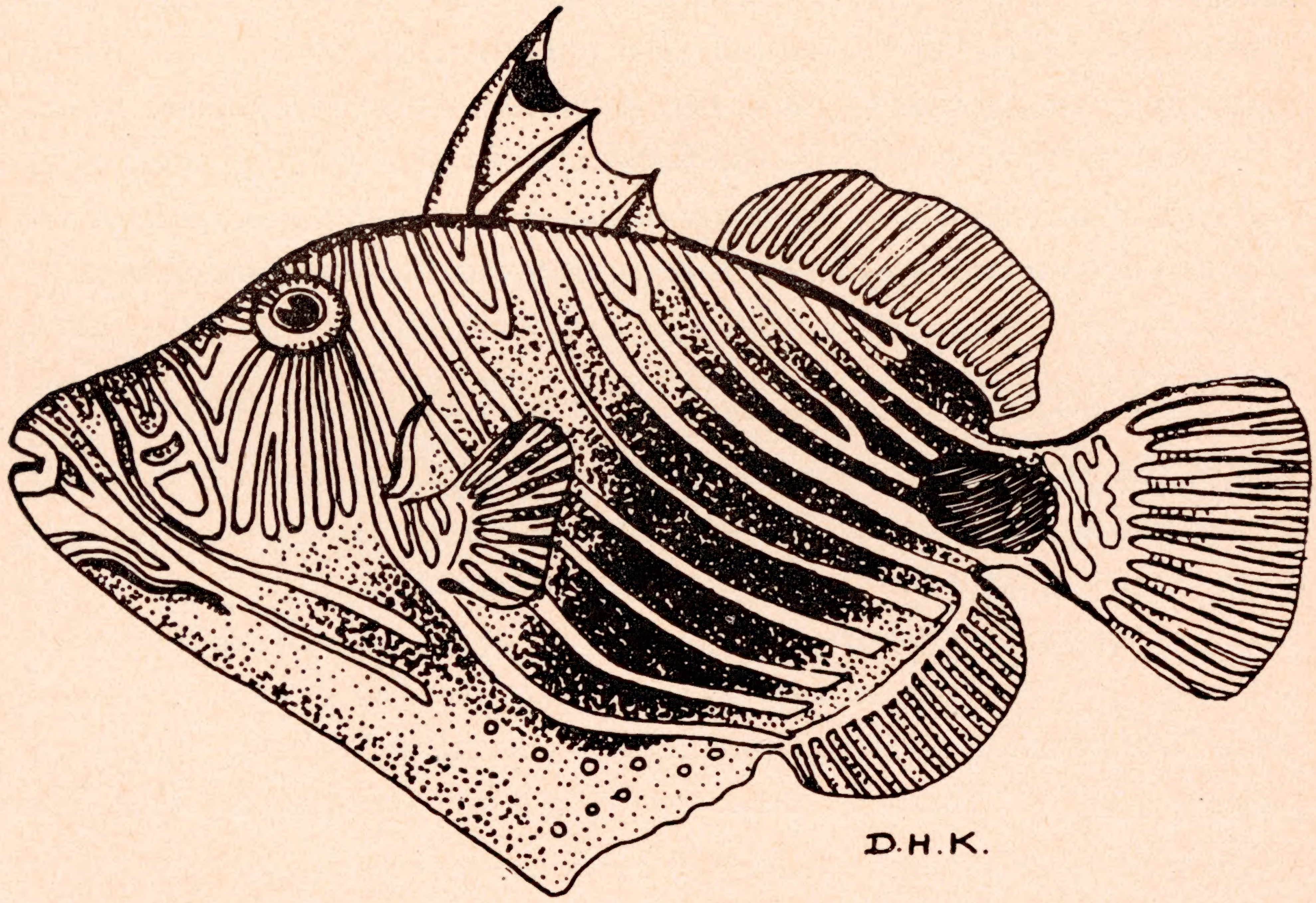

FIG. II

TRIGGER FISH

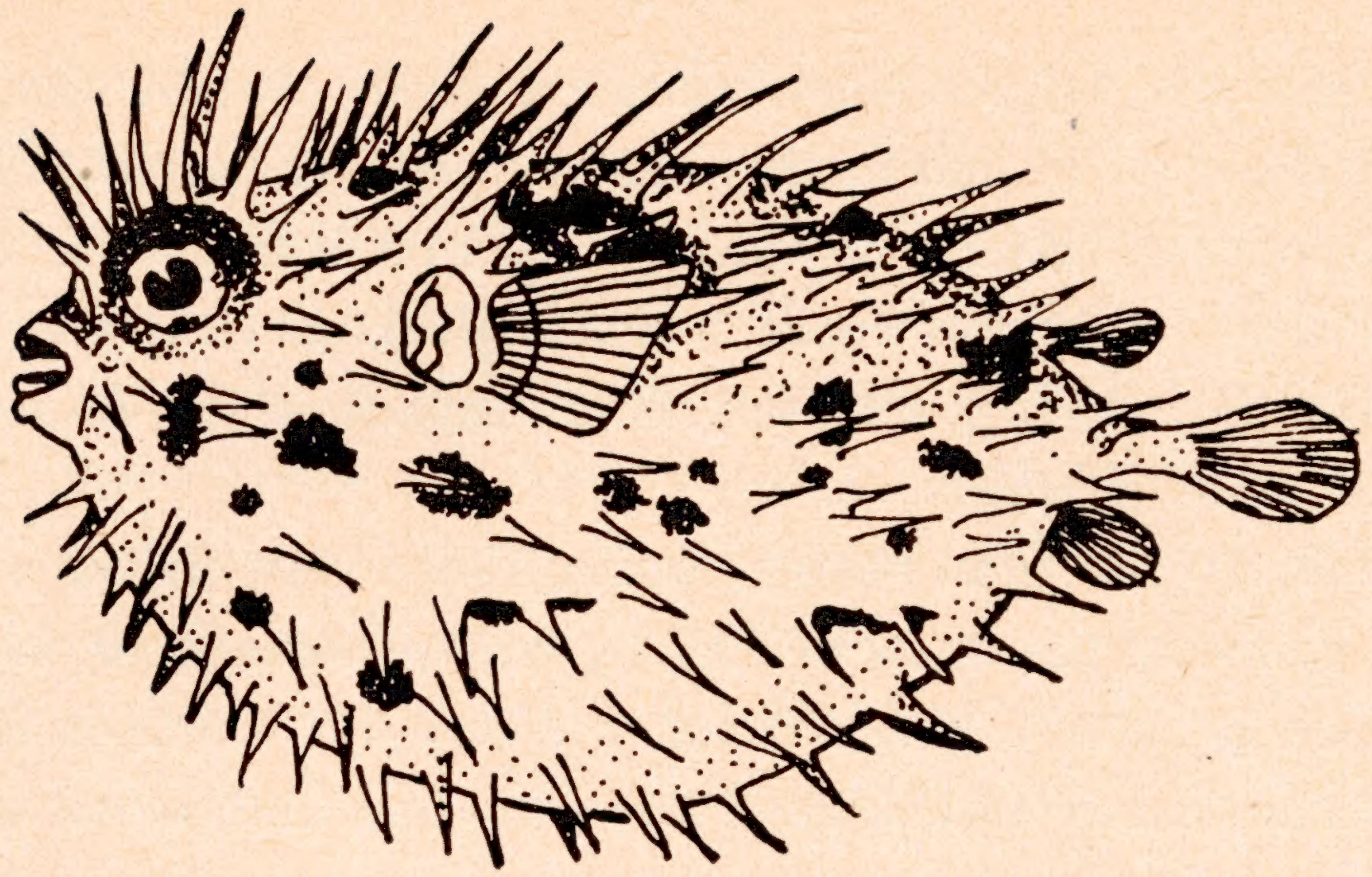

FIG. III

PORCUPINE FISH

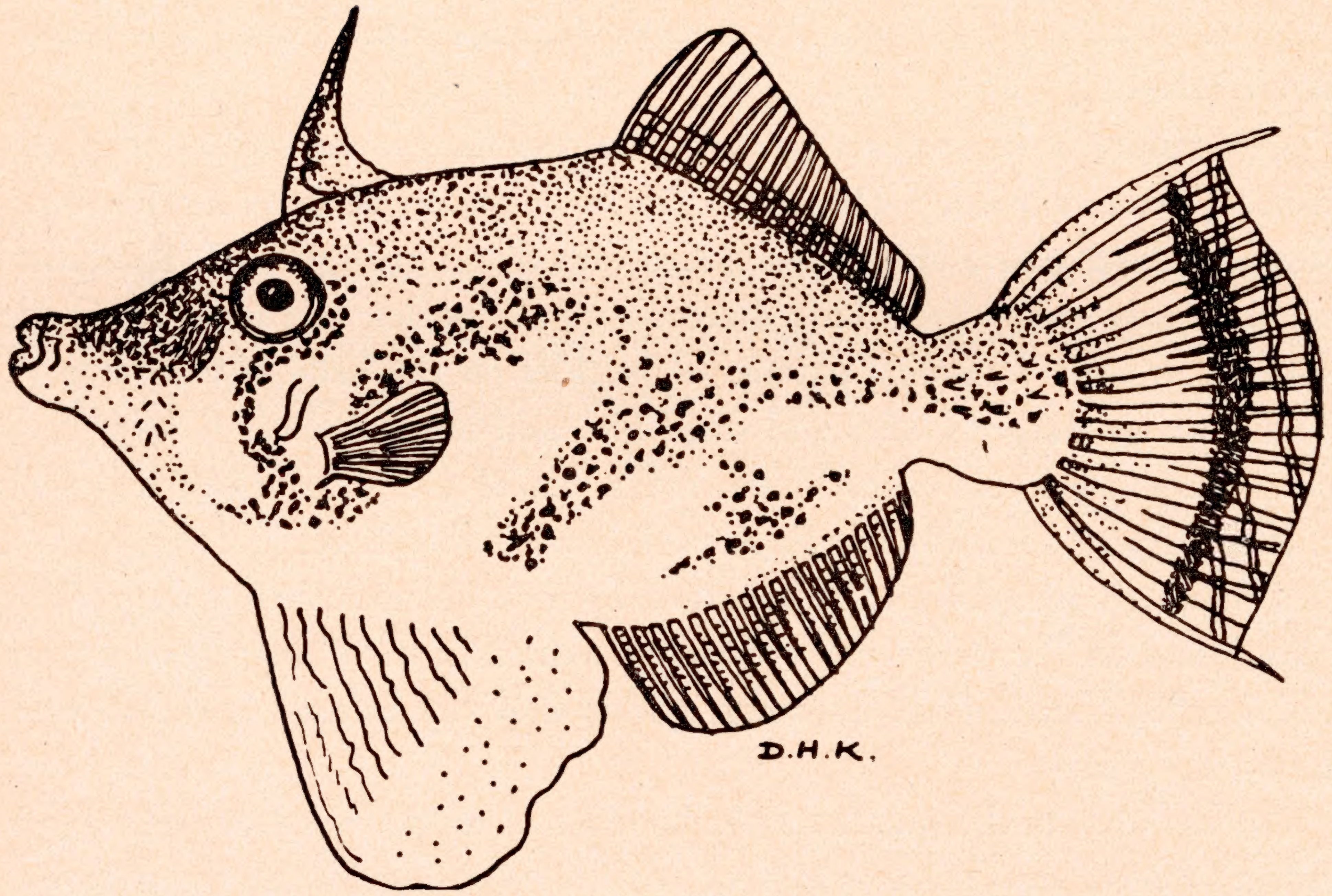

FIG. IV

FILE FISH

There are many species of fish resembling these in shape but which differ in color and size. None of them should be eaten at any time.

However when any fish becomes tainted it means usually that bacterial decomposition has set in, and many of the products of bacterial decomposition are poisonous in varying degrees. This is true of fish found anywhere. It is particularly true in the tropics where high temperatures induce rapid decomposition. Fish having soft, oily flesh decompose the fastest and are naturally the worst offenders.

Some fishes, as the wrasse-fishes, parrot fishes, etc., in the tropics are rendered temporarily poisonous by feeding on poisonous foods, such as poisonous mussels or polyps. It is difficult to detect this condition and consequently there are numerous records of poisoning from this source. Little more can be said on this point except that in most of the recorded cases the fish causing the poisoning were old and large fish. At other times and at other places at the same time these fish can be perfectly wholesome.

FISHES THAT ARE ALWAYS POISONOUS AND SHOULD NEVER BE EATEN

Some fish are known to contain poisonous alkaloids in the flesh. These should never be eaten.

One family of these fishes known to be poisonous is the puffers or globefishes (Tetraodontidae). There are numerous species of these in the south seas and deaths have often been traced directly to eating them. These fish can be easily recognized. They have no regular scales, and have a smooth slimy skin with occasional patches of prickles on the belly. All have large heads, wedge shaped bodies and small fins, and most of them have a characteristic disagreeable odor. When taken out of the water these fish puff themselves up to resemble a ball. A typical one is shown in Fig. I.

The puffers are known to be poisonous by most of the natives of the various islands and are known by many common names. In the Philippines they are often called botiti, while on other islands they are known as tinga-tinga, muki-muki, etc.

Another family of fishes known to be more or less poisonous are the trigger fishes (Balistidae). These fishes, of which numerous species occur in the South Pacific, can readily be recognized by their oval shape, by the hard plates that cover the body and by the three spines that make up the foremost dorsal fin. They occur in many colors. The outline of this fish is shown in Fig. II.

The porcupine fishes (Diodontidae) are often poisonous. They are easily recognized by the long sharp spines that entirely cover the body. They are usually dull green or grayish white in color. Sometimes dark spots or bands occur on the back. The typical form of this fish is shown in Fig. III.

The file fishes (Monocanthidae) are considered poisonous at certain times of the year, especially during spawning season. The flesh of these fishes is dry, bitter, and offensive at all times and is rarely eaten. They are easily recognized by the facts that they have but one spine on the back, and their skin is rough to the touch. They are known as pacol on some of the islands.

Other fishes that are considered poisonous especially during their spawning seasons are the large barracuda (*Sphyraena langsar*), a small dark banded goby, called the biat in the Philippines, and a species of herring (*Clupea longiceps*). Other tropical members of the herring family are suspected as well.

THE DISEASE CAUSED BY EATING POISONOUS FISH

Eating the above mentioned fish with poisonous flesh causes a disease known as ciguatera. This is characterized by stomach disorders, cramps and partial or complete paralysis which in severe cases may be followed by death.

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DR. MILLER BECOMES SECRETARY OF THE PACIFIC DIVISION

DR. ROBERT C. MILLER, Director of the California Academy of Sciences, has been elected Secretary of the Pacific Division, American Association for the Advancement of Science, by the Executive Committee of that body. The Pacific Division, numbering over two thousand members, is the largest organization of scientific men in western North America. Dr. Miller was elected in succession to Professor J. Murray Luck, of Stanford University, who retired from the secretaryship after fifteen years of outstanding service.

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ACTIVITIES OF THE STUDENT SECTION

THE STUDENT MEETING of June 10 was attended by some forty persons. Student members were gratified to note a liberal sprinkling of adults, who came just because they found the program interesting. Mr. Malcolm Jolly of the Museum of Vertebrate Zoology, University of California, spoke on the subject, "Experiences with Eagles." He brought with him his pet Golden

Eagle, "Smoky" by name, who posed, screamed, and showed a marked proclivity for stealing the show.

At the next meeting, on July 8, Mr. Tom Meighan, a member of the Student Section, will discuss and demonstrate "Some Colorful Experiments in Chemistry."

Visitors, irrespective of age, will be welcomed.

SECTION 562 P.L.&R.